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AN ADDRESS DELIVERED AT THE ANNUAL MEETING OF THE BOSTON MICROSCOPICAL SOCIETY.[1]

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To those of my generation this modern world — which most of you take as a matter of course, it being the only condition of things of which you have had experience — is a perpetual source of wonder, a standing miracle. Science and art have in our time so changed the aspect of every-day life that one of a certain age might well believe himself on another planet or in another stage of existence. The wand of Prometheus is in our match-boxes; the rock of Horeb gushes forth its streams in our dressing-rooms; the carpet of Arabian story is spread in our Pullman car; our words flash from continent to continent; our very accents are transmitted from city to city; the elements of forming worlds are analyzed in our laboratories; and most wonderful and significant of all, the despotic authority of tradition is unsceptred since the angel of anæsthesia has lifted from womanhood the burden of the primal malediction.

Among the acquisitions of knowledge coming within my own easy remembrance is the conquest of the invisible universe achieved for us by the microscope. I have thought that my own experiences in relation to this miraculous instrument might serve as a kind of vertebral support to the otherwise *disjecta membra* of the brief discourse to which you are to listen.

You may smile as I hold up before you a pocket magnifier such as you can now find for sale at any of the opticians' shops, but which I remember from the days of my boyhood. It is principally remarkable as recalling the person from whom it was purchased. There were two ministers in Essex County noted for uniting the study of science with the exemplary discharge of their clerical duties: the Rev. Dr. Manasseh Cutler, of Hamilton, born in 1742, and the Rev. Dr. John Prince, of Salem, born in 1751. The last mentioned died at the age of eighty-five, in the year 1836. He was an ingenious workman, and among other things made some improvements in the air-pump. Salaries were small in those days, and even in our own time clergymen, who are apt to be blest with fruitful vines and abundant olive-plants, are not gen-

[1] Printed at the request of the Microscopical Society.

erally pampered into apoplexy. Good Dr. Prince had occasion to import various philosophical instruments for his own use, and now and then turned an honorable shilling or dollar by disposing of a microscope or a kaleidoscope, or perhaps an air-pump, to a clerical brother whose children did not happen to be hungry. Such fortunately was the condition of my father's family when he purchased this magnifier, or microscope, as we called it, of the kindly old natural philosopher of Salem.

The text-books of my medical pupilage treated the microscope and the results obtained by the use of it with distrust and even with contempt. I may refer to Dr. Godman's edition of Bell's Anatomy, published in 1827, in proof of this. Even so late as 1844, when the fourth edition of Bostock's learned Physiology was published, the microscope fared little better at the author's hands. From the spring of 1833 to late in 1835, I followed the courses of the most renowned teachers of Paris, great physicians and surgeons, distinguished anatomists, physiologists and pathologists, and I do not remember ever hearing one word about the microscope or the results obtained from its employment. But in the year 1833 a French author had already published an Organic Chemistry, in which he described and figured a small simple microscope which was called after him "microscope Raspail." François Vincent Raspail is well known to the biographical dictionaries as one of the reddest-hottest of red-hot red republicans. Half his time, more or less, he contrived to be kept in jail, and there is no place more favorable for study than a prisoner's cell. He worked very hard with his microscope during his imprisonment, and even with his imperfect instrument came near anticipating the cell-doctrine which was maturing in the ovary of science. His "spiro-vesicular theory" is a very interesting and curious foreshadowing of a great coming discovery which was to eclipse all that had gone before it in that line of knowledge. But to see what Raspail saw with his imperfect little doublets one must be shut up in a cell as he was, so that his attention may be concentrated and his pupils dilated; at least I thought so after doing my best with his simple microscope, which you see here as it was given to the world forty years and more ago.

In the year 1836 the *British and Foreign Medical Review* was established, under the editorship of Dr. John, afterwards Sir John Forbes, and Dr. Conolly. It was through the pages of this admirable journal that many English and American readers first became acquainted with the more important results of those microscopic investigations which had been going on for the last few years, since the achromatic microscope had been invented. For, as most of you know very well, it was between the years 1825 and 1830 that the compound microscope received that great improvement which converted it from a

plaything, or little better, into a trustworthy scientific implement. In July, 1838, the *Review* gave an account of the minute structure of nerves as described by Ehrenberg; a year later of the structure of bone; in 1840 an analysis of the labors of Schwann, which began the revolution in modern physiology by showing the basis of structure and mode of growth in animals; in short, the history of cell-development and cell-transformation in the animal structure, and its essential identity with that of the plant, already described by Schleiden. In 1842 Mr. Paget, now Sir James Paget, gave a full abstract of the grand series of histological results arrived at by the aid of the regenerated scientific instrument, and we who had been taught in the school of Bichat and Beclard found that the microscopists of the new era, like Molière's Médecin malgré lui, had *changé tout celà*, and we must learn what we called our "general anatomy" all over again.

The first achromatic microscopes I remember were some small hundred-franc instruments, with nothing but a rack-and-pinion adjustment, made by Charles Chevalier, of Paris. The first English instrument I recollect was the great Ross microscope, costing, I think, some six hundred dollars, ordered by the Lowell Institute. This mighty optical engine has the characteristic merits and defects of the English instruments in general. Its workmanship is admirable, its stability like that of Bunker Hill monument or the pier which supports an equatorial telescope. But it is heavy enough to make the shoulders of Atlas ache, and has brass enough in it for a pair of andirons. I had the privilege granted me of using this instrument freely, and learned to appreciate the excellence of its lenses and its mechanism.

Thirty years ago, having seen a microscope just brought home from Paris by one of my friends, which claimed great superiority, being a somewhat reduced form of that furnished to the College of France and the Academy of Sciences, I ordered one like it from Charles Chevalier, the one you see before you. This microscope, out of which I got great comfort and edification for a time, has pretty nearly all the defects which can be illustrated without extravagant expenditure. You remember the temperance lecturer's unsteady companion, who, being asked in what capacity he attended the speaker, replied that it was as the "shocking example." So I may use this instrument this evening as an instructive specimen, showing the faults to be avoided, and enabling me to bring out the excellences to be aimed at in a microscope. And first I need say nothing in particular about the lenses, for although Oberhaeuser, Nachet, and Hartnack have sent out many admirable glasses from Paris, everybody knows that when we say a "French objective," without specifying that it comes from one of the first-rate makers, we do it something in the way that our benighted colored fellow-citizen spoke of the preacher about whom he was questioned: "A fair preacher,

— yes, a *pretty* fair preacher; a *New York* man." To make it work in the horizontal position with a level stage, an elbow containing a prism is introduced. Now every needless bit of glass between the eye and the object is like that added drop of water which, as Father Mathew (or some other Irishman) says, only spoils the punch. Again, an instrument should be as portable as is consistent with sufficient solidity of construction, and also capable of being set up and returned to its case with the least possible trouble. This microscope screws into its own case, which is nearly as big as a funeral casket, and it almost requires an undertaker to lay it out after one has done with it. Every needless joint in a microscope is an evil, costing money and tending in the long run to produce unsteadiness, and this instrument is full of knees and knuckles and elbows. The fine adjustment, which should demand no perceptible effort for its movement, carries the whole stage up and down, and requires some outlay of force to effect the change of focus. On the other hand this, as well as the larger pattern of Charles Chevalier, anticipated by some years the arrangement more conveniently carried out by Professor J. Lawrence Smith, in his inverted microscope, which, like this of Chevalier, is especially adapted for chemical investigations.

My experience with this complex instrument gave me a taste for simplicity in microscopic stands which has been shared by better workers than myself. I remember that Jeffries Wyman used to keep a complicated and imposing microscope under a bell-glass on his table, but the one which he chiefly used was perfectly simple and showed the marks of long and hard service. And Dr. Waldo Burnett, whose enthusiasm and ability promised fair to make him one of the most distinguished microscopists and students of science of his time, a young man whose early death I have never ceased to deplore, bore witness to the same effect. "Although," he says, "there are many times when all the nice mechanical arrangements of an English mounting may be indispensable, yet the man who does the real work, and from the labors of whom this science is to progress, will not use them once in a hundred times. . . . . They are most excellently adapted," he thinks, "for that class of microscopists who are not desirous of being workers so much as of being amateurs in this department of science."

I am afraid I have been somewhat of a fanatic in my attempts to simplify and cheapen the mechanical part of the microscope. There are reposing in some dark receptacle more than one, —

"Monstrum horrendum, informe, ingens, cui lumen ademptum,"

which was an uncouth approximation to the idea at last worked out to my content in the not inelegant instrument you see before you as now manufactured in Philadelphia, and which in one form or another I have used with satisfaction in the lecture room for a number of years. Though intended for passing from hand to hand around a class of stu-

dents, I have found it convenient enough for ordinary use, especially with the addition of the simple hinged platform and of the stage of which I show you the first finished specimen from an optician's establishment, made from a pattern furnished by myself, and embodying a plan of movement I have long tried and found eminently serviceable.

I have owned and own a good many objectives, and have made trial of a great many. Chevalier's, Oberhaeuser's, Grunow's, Spencer's, Tolles's, Gundlach's, one or more of each of their make I possess. Three of Spencer's which I have, made a quarter of a century ago, are admirable glasses. The $\frac{1}{12}$ once owned by Waldo Burnett was carried to Europe by him and pitted against the best English and French objectives he could meet with, coming out if not always with victory, never with defeat. I need not speak to you of Tolles's objectives, since they are recognized by the experts as unsurpassed if not as unequalled by any made in any part of the world. Boston may well be proud of the telescopes of Alvan Clark and the microscopes of Robert B. Tolles.

I suppose every microscopist goes through a period of combative excitement about his objectives if he has any remarkable ones. It is perfectly true, as Dr. Carpenter says, that "it is not the *only* nor yet the *chief* work of the microscope (as some appear to suppose) to resolve the markings of the siliceous valves of the *Diatomaceæ*," and that "if one tenth of the attention which these objects have received had been devoted to the careful study of the life history of the tribe of plants which furnishes them, it cannot be doubted that great benefit would have accrued to physiological science."

We can hardly overvalue the admirable achievements of the great European opticians or of our own masters in the art. But studying out a difficult point in vegetable or animal structure is one thing, and fighting objectives is another, as full of excitement as cock-fighting, and as different from true scientific work as that is from laying eggs and breeding chickens. I have done a good deal of it, too much I fear, when I might have been more profitably employed. Let me tell you briefly of one of these objective battle-royals in which I was a combatant. It was at the meeting of the American Medical Association, in New York, in 1853, that fatal gathering rendered memorable by the Norwalk disaster, in which so many returning members of the association lost their lives. I had carried to the meeting one of my own homely wooden stands and my most formidable objectives. I cannot remember just how many showy instruments I encountered, but I know that I considered myself as having got the better of all their owners. While I was congratulating myself on this success, my attention was called to a rickety little microscope in the hands of a gentleman who seemed to be trying to coax some remarkable exploit out of it. Presently he took a specimen of the *grammatophora subtilissima*, with which

none of the rest of us could do anything, and the first thing I knew was, there he had it resolved so that its markings were as plain as the "rungs" of a ladder. I found that I had as my antagonist Mr. Lewis Rutherford, since famous in science, especially for his astronomical photographs. He was working with an instrument made by Amici, of Modena, having the first immersion objective I had ever seen, very possibly the first that was ever in the country.

Next to the pleasure of beating another is that of being soundly and satisfactorily beaten one's self. Any defeat that falls short of completeness is hard to bear, because something in us says, "Try again," and we have lost the confidence we had when we first began the combat. But a thorough, unequivocal, unquestionable beating leaves us at peace with ourselves and brings a kind of astonished acquiescence akin to pleasure. Besides, there is something in almost every one of us which we hate, a second self who is always flattering us with an idea of our superiority; and our best self rather enjoys the humiliation of our lying and cajoling meaner half, when it is left sprawling in entire discomfiture.

I have given you a brief sketch of some of my own experiences with the microscope, but I would not have you think I attribute too much importance to them. My dealing with the instrument has been principally as a teacher, and not of microscopy as a specialty, but as a fractional portion of long-extended courses on anatomy, delivered to large classes. The most I could hope for was to teach them the rudiments of histology, and more especially to give them knowledge enough to make them wish for more. I have therefore aimed at having perfectly and easily manageable instruments, at selecting the most important and interesting objects, and at making everything as plain as practicable, knowing well that if a mistake in looking through a microscope is within the bounds of possibility, the young student will be certain to make it. If there is an air-bubble, or a crack in the glass, or a speck of dust, or anything of any sort which has no business in the field of vision, his eye seems instinctively to fasten upon it, as the needle leaps to the magnet, as lovers' hands fly to each other the moment the train enters a railway tunnel.

I do not forget that this society has different ends in view from mine. I suppose these ends to be chiefly the two which I now mention: in the first place the exhibition of the most interesting microscopic objects in the various specialties cultivated by different members, and next to that the comparison of instruments and the showing up of new inventions and contrivances in microscopic apparatus.

An association formed with these objects may give much entertainment to its members, and if conducted in a truly scientific spirit, some real instruction. But there is great danger that such a body will lapse into a kind of aimless dilettanteism which will keep the more genuine

students of science away from its meetings. You will pardon me for quoting some very severe remarks made in the *British and Foreign Quarterly Review*, in 1842, a year or two after the London Microscopical Society was formed; Mr. Webster, you may recollect, adopted as his motto, on a memorable occasion, *vera pro gratis*. When you remember that the society against which these remarks were directed had Richard Owen as its president, you will see that it was not likely to be frightened by a few tingling paragraphs, and I am sure you will not be.

"In the present day," the writer says, "there are many Leeuwenhoeks in desire, if not in fact; that is, there are many who think their time well occupied in seeing, without understanding or explaining, the various objects of microscopic investigation. . . . . In the same spirit which actuates them separately the Microscopic Society has been founded. A number of persons — anatomists, botanists, geologists, chemists — are here combined as if to form one large and complex Leeuwenhoek, with nothing more in common in their disorderly pursuits than that they all study little things with the same apparatus." I hope you will be able to bear the passage which follows. It sounds harshly, but there is a lesson in it, which the philosophers — minute philosophers, as Bishop Berkeley would have called them — to whom I read it will, I believe, thankfully appropriate.

"We have no doubt whatever," this irreverent writer goes on to say, "that this society is even mischievous, by giving to an apparatus the highest place in the investigation of knowledge, and by inducing industrious men to study little pieces of every science, because they have the means of *seeing* the objects concerned in them. It is in this way that the microscope may be again, as it once already has been, employed to no good purpose."

Here, also, are some remarks which I find quoted in the *American Journal of Microscopy*, and which I cannot improve by paraphrasing: —

"Most of the discoveries with the microscope have been made with instruments of moderate power and cost, and have resulted from patient, diligent observation. As we glance through the history of the microscope, we cannot avoid noticing how little has depended upon the instruments, and how much upon the methods and perseverance of the men who have accumulated so vast an amount of information; and although the wonderful perfection of modern high powers — and indeed of the microscope generally — has undoubtedly increased both our means of research and the number of observers, the conclusion is forced upon us that, as we use it, the microscope is almost a new sense or a mere toy. I hope the growing tendency to the latter result may find no place among us."

It is a fact strikingly illustrative of the above statement that Dr. Waldo Burnett parted with his Spencer's $\frac{1}{12}$, of which he thought

so highly for its resolving powers, and purchased a $\frac{1}{8}$ of the same maker, finding it, I suspect, more serviceable for general use, and much more convenient on account of its greater working distance. When it comes to studying the markings of the diatomaceæ or the movements in the interior of the salivary globules, as our skilful friend, Dr. Richardson, of Philadelphia, has studied them, the power can hardly be too high or the angle too large.

In this connection I may venture to offer, though with some hesitation, the results of my own experience, perhaps I may say the lessons derived from my own faults and mistakes.

There are some difficult problems, as I have just said, that no doubt require the highest powers, the nicest adjustment, and the best illumination. Many obscure points will be cleared up by the use of these agencies. But for common employment in histology a working distance which admits the use of covers of ordinary thickness is, to say the least, very convenient. May I hint, in an undertone, that a great deal of time and trouble is often expended in the task of "adjustment for cover?" — so much that a non-adjustable objective sometimes proves a relief for which one is devoutly thankful.

My own impression is that the ordinary diaphragm is of little consequence where the mirror or lamp gives easily every degree of obliquity. With high powers a very minute opening brought close up to the slide is much valued by some working microscopists. I have within a day or two seen a very ingenious arrangement of this kind in the laboratory microscope of Messrs. Bausch & Lomb, — a convex diaphragm in shape like a table-bell, simple and manageable, as it seems to me, and likely to approve itself useful.

The use of the achromatic condenser is far less general than I should expect it to be from my own experience of its value. I agree with Dugès, who first used it in an efficient way, that the thickened and blurry outlines of microscopic images seen by common illumination are painfully displeasing to one who is accustomed to the brilliant distinctness given by a pencil of light passed through an achromatic combination.

I do not think the singular revelations of structure made by employing polarized light are enough insisted upon. I do not remember any text-book where the extraordinary way in which it brings out the structure of bone, for instance, is referred to, — a fact with which I have been familiar ever since I began to use the polarizing apparatus belonging to my Chevalier's microscope.

I must insist on the great saving of wear and tear to the eyes afforded by the use of a *hood*, as it is called, or a screen to keep the light from the eye not in use, as well as in some degree from the other. Many persons shut the eye not applied to the instrument, and I venture

to say that if they do, they find it more fatigued than the one used. Here is one of my own screens or shades which nips a tube of any size, at any point.

There are those — my skilful and scientific friend, Dr. Fitz, is one of them — who prefer to work with the body of the microscope always vertical. They choose the short upright instruments, such as Oberhaeuser and other French makers since him have furnished, and more recently some of our own manufacturers have been putting in the market. They can dispense with the hood and all the contrivances for holding objects, and find great convenience in handling their slides. In examining objects in fluid, except in thin films, the vertical tube and horizontal stage are absolutely necessary, unless the tube has a joint containing a prism, a form which may be considered obsolete except for the chemical microscope. But I think few workers would be content to give up the great ease and comfort derived from the inclined position, and almost all the better instruments are now capable of every inclination from the vertical to the horizontal.

It would be pleasant to speak of all that has been done for microscopic science in this country; of the noble contributions to embryology, anatomy, pathology, which have come forth from Cambridge and from Washington; of all that we owe to our devoted students of nature from the days of Professor Bailey to the present time. I should like to live over again in words the triumphs of Charles Spencer, who, "in the backwoods of America," as our English friends put it, wrought lenses that turned the London makers paler than blue glass would make them look, and with angles of aperture that straddled far outside of the limits which Andrew Ross, the king of them all, declared to be the boundaries of the possible. I visited Mr. Spencer twice at Canastota, a small interior town with the burnt stumps of the forest trees all round it, and felt that I was a pilgrim to the microscopic Mecca.

I should like to speak of the admirable workmanship of the stands by Zentmayer, and of the very cheap and serviceable instruments furnished by other leading manufacturers of New York and Philadelphia.

I have had the wholly unexpected pleasure of a visit this very day, since writing what I have just read, from the two great masters who have made the reputation of American microscopes, — Mr. Spencer and Mr. Tolles, — and I hope I have the honor of counting them among my audience. Their presence shall not prevent my alluding once more to the large debt we owe them. We Americans are sometimes thought to be too forward in asserting the claims of our countrymen. But it must not be forgotten that our compatriots have often had to contend with a jealousy that ignored their existence, or a dishonesty that cheated them of their due. As an evidence of this I will refer to the manner in which the name of Mr. Spencer was coolly dropped from

the second edition of Quekett's Treatise on the Microscope, for no better reason, I believe, than that he had insulted the nature of things and violated the order of the universe by doing what King Andrew Ross had declared to be an impossibility. Or if I wished for a still more flagrant example of the treatment American inventions and discoveries are exposed to, I would point to Sir James Simpson's handling of the subject of anæsthesia, under the title Chloroform, in the eighth edition of the Encyclopædia Britannica, a piece of scientific manipulation hard to match in the history of discoveries and inventions.

All honor to the American philosophical artist who bettered the famous saying of another Western New Yorker, that "some things can be done as well as others," and showed the microscopic trinity of London that some things can be done *better* than others. Long may he live to add by his inventive genius to the triumphs of American science and art! As for our townsman, Mr. Tolles, of whom I have already made repeated mention, I cannot resist telling you that I have just received a little pamphlet from Philadelphia, in which the writer, a well-known and accomplished expert, Dr. J. Gibbons Hunt, uses the following words, a little labored in expression, but intelligible and flattering to us of Boston: —

"The power to direct your steps at will, while threading the labyrinth of optical construction, marks the master. That Mr. Tolles can do. In him are greater optical possibilities in the construction of lenses than in any other maker, and my judgment is based solely on work." The meaning of which is that he makes the best objectives Dr. Hunt has ever made use of. In comparing a $\frac{1}{10}$ of Tolles's with Powell and Leland's new $\frac{1}{8}$, Dr. Hunt says very neatly: "Alike in power, the English lens has a remnant of London fog in its construction; the Boston one is brilliant and clear as crystal. Moreover, the Boston glass shows clearly structural details beyond the penetration of the English lens, without change of focus." Wherever in a comparatively new civilization like that of America we find any good and genuine work done, it is not only our right but our duty to make the most of it, for the sake of its influence in stimulating the ambition of others to equal or excel it.

So if anything worthy of mention has been done in our own section of the country, or in our own town or city, we need not be afraid to commend it. I do not know enough of what has been done in other places to institute comparisons, nor do I wish to display any of that local vanity which is peculiar to Boston, London, Paris, Vienna, Timbuctoo, Berlin, Chicago, Pekin, New York, Salem, Little Pedlington, and all other cities and towns, large and small, to be found in Mr. Lippincott's Pronouncing Gazetteer of the World.

But I must remind you that not only have we the great microscopic artist in our own city, but also that some excellent microscopic

work has been done here. Dr. Waldo Burnett was hardly twenty-six years old when he died, but the scientific journals of his time bear evidence of his extraordinary observing power, enthusiasm, and industry, which would certainly have made him preëminent before middle life. Dr. John Dean's admirable microscopic and micro-photographic monographs on the spinal cord have given him a permanent name in science. I look around me, vainly searching for the familiar face of Mr. Bicknell, whose exquisite preparations, eagerly sought for during his life, are doubly precious since his skilful hands have ceased from their labors. Where would my demonstrations be but for the aid of my younger friends who have helped me with their beautiful handiwork, such as the series of sections of the spinal cord, by Dr. Edes, the delicate injections of Dr. Quincy, the admirable preparations of the retina, by Dr. Wadsworth and your president, Dr. David Hunt?

I hope this association will encourage continuous persevering work, aiming at exhaustive knowledge in definite, however limited directions. The danger always is that one will play instead of working with this charming instrument. It is so pleasant to keep doing over and over what we know we can do well and easily! I cannot quote too often the delicious satire of Dr. Johnson, in the Idler, on the scientific people of his own day: —

"Some turn the wheel of electricity; some suspend rings to a loadstone, and find that what they did yesterday they can do again to-day. Some register the changes of the wind, and die fully convinced that the wind is changeable. There are men yet more profound, who have heard that two colorless liquors may produce a color by union, and that two cold bodies will grow hot if they are mingled; they mingle them, and produce the effect expected, say it is strange, and mingle them again."

Have we not seen something like this in the case of some of our microscopic friends? I confess that I am rather tired of sections showing intestinal villi, and the vessels of the tongue, and the Malpighian corpuscles of the kidney. I should like, by way of change, to see our microscopists rivaling each other in displays of such objects as the taste-buds and the beaker-cells, the tubes of Henle and the organ of Corti, of Beale's spiral nerve-fibre, which my friend, Dr. Dwight, once exhibited to me, and many other things figured in Klein and in Frey, and copied by so many English and American compilers, who seem never to have looked upon them except in a scientific picture-book. We whose eyes are getting dim, whose minds are getting dull, whose knowledge is growing stale with antiquity, whose hands tremble over their old-fashioned microscopes, shall look to the members of this society to encourage the growth of science, and not merely to amuse themselves with seeing and doing over again what they have so often seen and done. If a reasonable

amount of systematic labor is performed by those who are as we know equal to the best kind of scientific work, no one will complain that an evening is now and then devoted to a purely popular exhibition of interesting and beautiful objects, familiar though most of them may be to all the students of natural science.

"The heavens declare the glory of God, and the firmament sheweth his handiwork." "God is great in great things," said Rousseau, "but in little things he is very great." I have looked at the vitellus of a Lymnæa, beginning its mysterious revolutions, with the same awe that I should feel in looking through a telescope at a nebula shaping itself into a sun or a planet. Why should we speak of great and small in connection with the Infinite? This invisible Universe to which the art of the optician has given you the master-key has wonders, grandeurs, miracles, all its own, and you have only to enter and take possession of a realm of knowledge into which, it may be, the intelligence of some orders of archangels has never penetrated.

RECENT PROGRESS IN OTOLOGY.[1]

BY J. ORNE GREEN, M. D.

On the Connection between Disease of the Ear and Disease of the Trifacial Nerve. — Two varieties of cases in which both the trifacial nerve and the ear were diseased have been observed by Moos.[2] The first group consists of cases where the auditory and trifacial nerves were both affected by a cerebral disease; of these he has seen four examples: one brought on by injury, two by cold, and one of unknown origin but followed later by ataxia. The nervous disturbances were on both sides, and only the sensitive fibres of the trifacial were affected. In three of the cases the affection of the trifacial preceded that of the acoustic nerve; in the traumatic case the two nerves were affected simultaneously. The symptoms of the trifacial were, first, a temporary hyperæsthesia, followed in some cases by neuralgic pain, then partial or total anæsthesia; the symptoms of the acoustic were severe subjective noises which became weaker as the deafness increased. The deafness came on very rapidly in three of the cases, and remained in two, while the third case was permanently improved by the use of the constant current. No accurate diagnosis was made of the condition of the brain.

The second group consists of cases in which the middle ear was distinctly diseased and an affection of the trifacial showed itself either as the accompaniment of, sequel to, or the precursor of the ear disease. The symptoms in the trifacial were those of neuralgia of one of its branches, on the same side as the ear disease. The most frequently

[1] Concluded from page 585.

[2] Virchow's Archiv, vol. lxviii.

affected was the first branch, the least frequently the third. The neuralgia was sometimes intermittent, sometimes continuous; the sensitive points of Valleix were not constant; the pain was very variable, generally only in one branch of the nerve, although in one case it involved all the sensitive branches. The following is a synopsis of the cases: supra-dental neuralgia of the right side preceding an otitis media purulenta of the right ear; chronic purulent inflammation of the tympanum on the right with supra-orbital neuralgia of the right side; chronic purulent inflammation of the right tympanum, with a pearl tumor in the cavity and supra-orbital neuralgia of the right side of one and a half years' duration, completely relieved by the removal of the tumor and the subsidence of the inflammation in the ear; fistulous openings in the mastoid, from chronic inflammation with supra-orbital neuralgia on the same side, relieved by incision over the mastoid; acute inflammation of the mastoid, with phlebitis of the sinus lateralis, with neuralgia of the trifacial on the same side; acute purulent inflammation of the right tympanum with typical trifacial neuralgia on the same side.

Disease of the Nervous System from Ear Disease. — The extra-aural symptoms caused by a simple purulent inflammation of the tympanum are well considered by Hughlings Jackson[1] in a terse and careful article on the above subject. The affections of the nervous system resulting from the tympanic disease, as given by him, are (1) neuralgic pain, (2) paralysis of the facial, (3) scrofulous tumor in the brain, (4) cerebral or cerebellar abscess and meningitis, (5) pyæmia, (6) hemiplegia, (7) epilepsy or epileptiform seizures, (8) aural vertigo.

(1.) The neuralgic pain he only considers in general, without discussing the affections of the different nerves as is done by Moos in the preceding article. He regards it as merely symptomatic of an exacerbation of the tympanic disease, and says that, as a rule, it does not precede or usher in cerebral abscess or meningitis, but sometimes does precede paralysis of the face, and has thus misled to the diagnosis of rheumatic facial paralysis.

(2.) He has seen double facial paralysis from double tympanic disease, but thought it very rare. In one-sided facial paralysis he calls attention to the fact that the oblique position of the uvula, often spoken of as dependent on the facial paralysis, is in reality common in healthy persons, and when due to real paralysis is associated with a paralysis of the vocal chord of the same side, as he thinks, owing to affection of the bulbar part of the spinal accessory nerve or its nucleus. A true paralysis of the palate, associated with a facial paralysis and a tympanic disease, he considers due to intracranial disease and not to the tympanic disease. Facial paralysis with tympanic disease he regards as not a cerebral symptom when it is uncomplicated, but rather as a bone symptom,

[1] British Medical Journal, March 24, 1877.

showing an extension of the tympanic inflammation in an unfortunate direction. It may be the precursor of intracranial disease, but is rarely so, and when it is, it is independent of the intracranial trouble; "that is to say, the ear disease, by distinct processes, happens to do two entirely different things at once or in quick succession."

(3.) What Jackson names a scrofulous tumor he describes as a mass of tubercle found in the cerebrum or cerebellum in the place of an abscess from the ear disease. The symptoms, he says, cannot be distinguished except for their chronicity, from those of cerebral abscess. He cannot say positively that they were connected with the ear disease.

(4.) The differential diagnosis between meningitis and abscess in many cases of acute cerebral disease occurring with ear disease he thinks is impossible, but abscess has, in his experience, been the most common. As a rule in ear cases convulsions and hemiplegia appear late, and in many cases not at all. Headache and vomiting often lead to the diagnosis of stomach trouble, but the intensity of the headache, its persistence, its occurrence in unusual places, and the "purposeless" nature of the vomiting, with a clean tongue, prove the erroneousness of this theory. Active delirium in ear cases is by no means indicative of brain trouble, and should not be trusted until acute non-cerebral disease has been carefully excluded. The most trustworthy symptoms of acute brain disease are not mental, but rather severe headache, vomiting, constipation, retracted belly, and slowness and irregularity of the pulse. Optic neuritis frequently exists.

In many fatal cases of abscess of the brain no rupture of the abscess or of its vessels is found, and Jackson thinks that in these cases it is the pain which kills.

(5.) Pyæmia from ear disease may be mistaken for meningitis or abscess. Severe rigors, great rises and falls in the temperature, delirium without severe headache, are marked symptoms. In meningitis from an injury to the head there may not, however, be severe pain.

(6.) Hemiplegia in children with ear disease sometimes occurred without convulsion or loss of consciousness, and in such cases it is suggested that venous thrombosis with local softening was the cause, although in the cases seen no autopsy could be obtained.

(7.) In regard to epileptiform seizures with ear disease the usual explanation that they are due to reflex irritation is not accepted by Jackson, but he suggests the hypothesis that the aural disease leads to disease in Hitzig's and Ferrier's region, or else that venous thrombosis causes local softening. For both of these theories he thinks he has seen indirect evidence.

(8.) Aural vertigo he considers always due to irritation of the auditory expansions within the labyrinth, either from disease there or disturbances from without. It might be caused by almost any kind of

ear disease, and might be paroxysmal or chronic. The diagnosis is not certain, but can be approximated by bearing in mind the five chief causes of vertigo, which are, (1) stomachic (2) nervous, (3) ocular, (4) epileptic, (5) auditory. Jackson lays stress on the loss of perception of certain notes of the musical scale as pointing to disease of the cochlea.

Auditory-Nerve Vertigo. — In a paper on what has been variously called auditory-nerve vertigo, labyrinthine vertigo, and Menière's disease, Dr. Gowers[1] calls attention to the association of this form of vertigo with other symptoms which lead to a reference of the disease to other organs than the real seat of the trouble, the labyrinth.

The evidence on which the pathology of auditory vertigo is based is, he says, of three kinds: the frequent association of paroxysmal vertigo with defect or disturbance of the functions of the internal ear; some few pathological facts which show the existence of a disease of the semicircular canals; and, most important of all, the well-known experimental evidence of the connection between the functions of the semicircular canals and the maintenance of the equilibrium of the body. The theory, advanced by Goltz and accepted by Mach, Breuer, and Crum-Brown, is that variation in the pressure of the endolymph which fills the labyrinth cavity is the cause of the phenomenon, although in what way this is produced is not yet decided. The conclusion to be derived from a clinical study of the cases is that the morbid action causes a motor tendency to turn which is felt as subjective vertigo; this so disturbs the equilibrium of the body that the sufferer is thrown to the ground or feels a sense of corresponding movement or mere instability according to the severity of the attack. The sensation in the slighter forms is always in the same direction with the actual movement in the severer attacks: a mere sensation of movement in external objects is always from the side towards which the patient falls in the severer attacks. On this account Dr. Gowers lays particular stress upon the character of the vertigo as an important aid in diagnosticating its cause.

The derangements of hearing accompanying this form of vertigo are of two kinds, namely, evidence of undue excitation of the auditory nerve, subjective noises either permanent or at the time of the paroxysm, and a greater or less defect of audition. This defect of audition may be so slight as to be discoverable only with great care: the late Mr. Hinton pointed out[2] that it might be limited to the perception of sound conducted through the bones of the skull, and the same fact has been noticed by others. This is considered an important aid in the diagnosis, for if the labyrinth is unimpaired, the sound of a vibrating tuning-fork or a watch placed on the bones of the head is well heard, and a closure of the mea-

[1] The Diagnosis and Treatment of Auditory-Nerve Vertigo. British Medical Journal, March 10, 1877.

[2] Guy's Hospital Reports, 1873.

tus intensifies the sound very perceptibly; if, however, the labyrinth is impaired, closure of the meatus diminishes the intensity of the sound. Gowers has also found that although the tests with the tuning-fork may be perfect, those with the watch will sometimes show an impairment of the labyrinth; he also calls attention to the fact that while either or both of these tests by bone conduction show labyrinth trouble, the same tests by the meatus show no change, from which he concludes that testing the bone conduction with closure of the meatus is all-important for the diagnosis of labyrinthine disease.

The explanation of the vomiting which often results from labyrinthine vertigo is found in the connection of the nucleus of the pneumogastric with that of the auditory nerve in the medulla. This gastric disturbance is liable to mislead, particularly as it is found that in subjects of auditory vertigo, whose equilibrium nerves and centres are deranged, a gastric disturbance may excite a paroxysm of the special vertigo to which they are liable. Several marked cases of this are given; one in particular is quite typical of labyrinthine vertigo: a gentleman in perfect health while walking with a friend was suddenly "whirled around," and fell on his right side, the action being so violent that his friend was knocked over. There was no loss of consciousness, and in a few moments the vertigo subsided and he walked home. Two days after there was a similar attack, and although he attempted to support himself by a railing he was forced to the ground on the right side, and there was loud roaring in the left ear. The third attack occurred in bed, when the bed seemed to be rolling from the right towards the left side. In the fourth attack, less severe, all objects seemed to move from the right towards the left side. Tests showed that the watch on the skull was heard in the right ear but not at all in the left. The noise in the left ear and the defective "perosseal audition" for the watch in the same ear point to that ear as the seat of the trouble, and the movements in the attacks were such as would be expected from disease of that ear, namely, from the affected ear towards the opposite side. In this case there was a very marked association between the vertigo and gastric disturbance.

The differential diagnosis of auditory from gastric vertigo depends first on an impairment of the function of the auditory nerve, as shown by deafness, tinnitus, and loss of power of hearing a watch in contact with the skull; secondly, on the character of the vertigo. Gastric disturbance, Gowers says, produces a vague sense of disturbed equilibrium; labyrinthine vertigo is generally definite, giving a sense of movement in a certain direction, but is occasionally vague. On this account definiteness in the sensation is more valuable as a symptom of primary labyrinthine disease than the absence of definiteness would be in excluding such a disease. Vomiting, dyspepsia, and diarrhœa after an attack

of vertigo are not evidence that dyspepsia is the cause of the trouble, and it should be remembered that gastric derangement before the vertigo may be a primary cause of the vertigo, or may merely excite an attack in an already deranged equilibrium centre.

Although in auditory vertigo loss of consciousness at the time of the paroxysm is very rare, still it does sometimes occur, and can then be readily mistaken for an attack of apoplexy or epilepsy. A rapid return of consciousness with a persistence of the vertigo, the absence of local paralysis of any kind, a history of previous attacks of a similar nature, and the symptoms in the ear, already spoken of, would generally be sufficient to distinguish the disease from apoplexy. In a first attack, especially if severe, the diagnosis might for a time be impossible.

The differential diagnosis of auditory vertigo from epilepsy is more difficult, for it is well known that a sensation of vertigo often attends the slighter attacks of epilepsy. In both diseases the feeling is the same, and depends on an "incipient motor process," but in ordinary vertigo the movement is often not a mere compensatory action to maintain the equilibrium, but the patient is thrown to the ground with violence, as the result of what Ferrier calls a discharge of a motor centre, as in epilepsy. The definite character of the vertigo is not such a help in distinguishing auditory from epileptic vertigo as is the persistence of the vertigo between the paroxysms and its long duration during the paroxysms; also if it is produced by sudden movements of the head, it is probably auditory vertigo. Vomiting is also much more frequent in auditory vertigo than in epilepsy, while loss of consciousness is rarely seen, and then only in the severer attacks of auditory vertigo, while it is almost always present even in the slighter attacks of epilepsy. These symptoms, with the detection of defective audition, especially in hearing vibrations through the skull, will usually suffice for a diagnosis.

In regard to the treatment of auditory vertigo, while acknowledging that it is often an obstinate affection, Gowers thinks that by studying the peculiarities of each case much relief can often be afforded. As his paper shows that in auditory vertigo other conditions than those in the ear often concur in causing the special vertigo, the relief to these other troubles will often give relief. Care in diet and regimen, an antacid, bismuth, and belladonna will often relieve when the auditory vertigo is produced by a gastric derangement. To lessen the sensitiveness of the nervous structures he advises the use of the bromides of potassium and ammonium, with the addition of belladonna. Other sedatives he has found of no effect. In a syphilitic case specific treatment is required, while in some cases seen, quinine and salicylate of soda acted beneficially. Where there is evidence of an irritative process, blistering behind the ear has seemed useful; where there was a gouty tendency, colchicum and potass were of benefit.

At the conclusion of his paper, Gowers calls attention to the artificial production of auditory vertigo. The sense of confusion with tinnitus after quinine is well known, but a distinct auditory vertigo, with deafness and defective perosseal audition, he has produced in a very marked degree by salicylate of soda and salicylic acid.

PROCEEDINGS OF THE BOSTON SOCIETY FOR MEDICAL OBSERVATION.

O. W. DOE, M. D., SECRETARY.

FEBRUARY 19, 1877. *Meningitis simulating Intermittent Fever.* — DR. J. T. G. NICHOLS read a paper upon this subject.

DR. FITZ asked if the case could not have been one of meningitis arising from jaundice.

DR. NICHOLS thought not, as the chills began on December 21st, and the jaundice did not appear until January 12th.

DR. FIFIELD asked if there was any stress laid upon the spasm of the leg mentioned.

DR. NICHOLS replied that this appeared about a week before the commencement of illness; it did not recur, and there was no enlargement of the veins or any abnormal condition of the leg noticed.

DR. FIFIELD mentioned the case of a man who, while at business, suffered from severe cramp in the leg; on returning home at night he had a rigor, and died a few days after from pyæmia.

Dr. Fifield also remarked that, in recent foreign publications, mention was made of a series of cases of meningitis supposed to be of pyæmic origin. One case in particular was mentioned where a pleuritic effusion was removed by tapping; the patient, for a time much relieved, soon entered the hospital with chills, fever, sweating, and irregular temperature, and died. At the autopsy, the condition of the brain very much resembled that of the case reported by Dr. Nichols.

Dr. Fifield said that at a discussion which took place not long since among English physicians, the ground was taken that it was not necessary to have a wound to give rise to pyæmia; that it might depend upon impure air, malaria, etc.

DR. BROWN, referring to the latency of cerebral symptoms, even where meningitis may be quite marked, mentioned the following case, which he once saw at the Massachusetts General Hospital: —

A man, apparently going from his work, was picked up in the street, and supposed to be intoxicated. He walked into the ward without difficulty, and died that night. At the autopsy, meningitis with purulent formation was found. Another case of advanced pulmonary disease, showed cerebral symptoms only twenty-four hours before death. Post-mortem examination showed three abscesses of considerable size in the brain.

DR. FITZ thought that the condition of the spleen in Dr. Nichols's case refuted the theory of pyæmia, as under those conditions the spleen becomes enlarged and softened, which was not the case here.

Dr. Webber remarked that the case reported by Dr. Nichols resembled in some respects, especially in its periodicity, a case of caries of the vertebræ he had once seen.

The child had nearly recovered when measles supervened. The family removed into a malarial district, and the child began to suffer from chills, fever, and sweating, coming on every third day. Quinine abolished the attacks once or twice, but they soon returned regularly, though with less severity. Meningitis, affecting the brain, followed, and was supposed to be an extension from that of the spine. The question might be raised whether it was not of pyæmic origin dependent on the caries.

Dr. Webber added that recently centres of temperature have been found in the brain, and the theory has been advanced that we may have spasms of temperature, by irritation of these centres, in the same manner that we get spasms of muscles.

Dr. Fisher said that, having known of this case of Dr. Nichols', he had at the time suggested that perhaps the chills were what might be called nervous chills, judging from a somewhat similar case he had once seen in a lady of extreme nervous susceptibility, and that they did not depend on malaria.

Dr. Ellis asked the society if the chills arising from nervous exhaustion were not usually unattended with fever and sweating.

Dr. Fisher said that the case referred to by him had profuse sweats.

Dr. Webber said that he had usually seen the three stages present in such cases.

Dr. Boardman mentioned the case of a lady who, after confinement, had chills for four or five days in succession, attended with fever and sweating.

Dr. C. E. Stedman remarked that a patient of his, once after confinement, had a chill followed by sweating and a temperature of 106°, after trouble with the nurse.

Dr. Draper asked if the exposure to defective sewage had been sufficient to produce a condition of blood-poisoning.

Dr. Nichols said that the drain in the cellar of the bank had been very much out of repair for two months previous to the first chill, and the gentleman had been in the habit of writing at the bank two or three hours in the afternoon, exposed also to an atmosphere of coal gas.

His second attack of chills came on after exposure to sewage gas in his own house. The defect in the sewer was immediately remedied, and no other member of the family was affected, though the brother of a child sick with diphtheria was removed to this gentleman's house, and soon after was taken with the disease, whether from exposure at home or after removal it was not possible to state. A son who was in the bank suffered much from headache, which he attributed to the gas.

Dr. Webber remarked that he had somewhere seen a report of cases of meningitis depending upon coal gas.

Congenital Absence of the Head and Neck of the Femur. — Dr. Fifield referred to a case of congenital absence of the head and neck of the femur which he once saw at La Charité, in Paris. The patient, an elderly woman, suffering from progressive locomotor ataxia, was walking across the ward when a loud

cracking sound was heard, and referred by the patient to the right hip. It was supposed at the time that a fracture of the neck of the femur had taken place, but at her death, three days after, it was found that a large abscess, occupying the space of the head and neck of the femur and the cotyloid cavity, which were wanting, had ruptured. A published report of the case may be found in Garnier's *Dictionnaire Annuel* for 1875.

Foreign Body in the Eye; Removal of the Organ. — DR. WADSWORTH showed an eye removed from a boy fourteen years old, with the following history. One year ago, while striking a percussion cap, he received a piece on the eye, and lost sight immediately. There was no pain then or since. The eye had become shrunken and very irritable. At the time of the operation a piece of copper was seen projecting through the cornea, though nothing was perceptible on examination three days previously. Two points of interest in the case were that the shrinking had caused no pain whatever, and that the foreign body had begun to work itself out so quickly.

MARCH 5, 1877. *Glaucoma.* — DR. HAY read a paper giving a report of four cases of glaucoma; one case of glaucomatous depression of the disc, but without increase of tension; and one case in which the symptoms were not at the time typical of glaucoma, but which may have been a later stage of the disease.

DR. WADSWORTH referred to the fact that glaucoma followed facial erysipelas in one of the cases reported by Dr. Hay, and said that he had seen a case, four or five years ago, in which also glaucoma appeared to follow swelling of the face.

A woman, twenty-eight years of age, had had four years previously an ulceration of an eye tooth, with swelling enough to close the right eye for some days. When the eye could be again opened she observed that its vision was impaired, and it continued to fail, without any pain, until, at the time he saw her, the sight was entirely gone. The pupil was not enlarged, and the iris responded to the stimulus of light in the other eye, but the tension was somewhat increased, there was glaucomatous cupping of the disc, and pulsation of the retinal artery at its edge. She did not know that she had ever tested the vision of the right eye separately before the swelling which had closed it.

With reference to a new theory of glaucoma of which Dr. Hay had spoken, Dr. Wadsworth remarked that it might be said there had lately been three new theories advanced. Knies, to whose theory Dr. Hay had alluded, had found inflammatory products in the mesh-works forming the canal of Fontana, through which the outflow of the intra-ocular fluids should chiefly take place, and therefore referred the increased intra-ocular tension to the blocking up of this channel.

Klein considered the cupping of the disc, in certain cases at least, in which there is an increased tension discovered, to be dependent upon a sclero-choroiditis posterior limited to the narrow district about the nerve which is bounded by the vascular circle of Zinn, a circle formed by the anastomosis of branches of some of the ciliary arteries within the substance of the sclera.

Schnabel asserts that there is in glaucoma no opacity in the vitreous, but

that the opacity exists only in the cornea. This should hardly be called a new theory, however, but rather a modification of existing views. Schweigger also states that opacity of the vitreous in glaucoma has never been demonstrated.

As to the theory of Knies, Dr. Wadsworth said a part at least of the eyes which he had examined had undergone very considerable degeneration and inflammatory changes, and when there had been decided inflammation it could not excite surprise that signs of inflammation existed in the canal of Fontana. This alone would not, however, prove that the blocking up of the canal was the essence of the disease. Knies himself admitted that he had not been able to find evidence of blocking up of this canal in cases of glaucoma simplex Of the class of cases referred to by Klein, Dr. Wadsworth said he had observed the following, about a year ago: A man, fifty years of age, had observed for two or three years a diminution of sight in the eyes, and for a year had noticed a halo about the moon or a lamp, and on entering a warm room from the open air there was often a fog before the eyes for a few moments. There had never been any pain. The anterior part of the eyes appeared normal; the iris reacted well to light; tension was not increased, indeed not up to the normal physiological limit at that age. The media were perfectly clear. There was, however, marked cupping of the disc, with strong pulsation of several arterial branches at the edges of the cup in both eyes. The field of vision was much and irregularly contracted in one eye, in the other less contracted. Vision was $\frac{1}{20}$ in each eye; accommodation deficient in amount. Operation was not advised. The patient had been heard from indirectly, some months later, and the above condition was reported as having changed but very little.

Dr. Derby referred to the comparative rarity of glaucoma in this country, and said that in his own practice he had seen but sixty-one cases of glaucoma in seven thousand eight hundred and forty-six patients, while in Berlin he had seen iridectomy performed for glaucoma nearly as often as once a week.

Dr. Hay said he thought the cases were less frequent now than ten years ago.

With reference to the operation of iridectomy for glaucoma, Dr. Jeffries said that an incomplete removal of the iris often gave a good result in checking the disease, and was probably due to the fact that in attempting to follow the rule and get the iris cut up to the periphery, we naturally made our corneal cut well back into the sclerotica. In this way we get an elastic wound, so to speak, to the relief of the ocular pressure. Dr. Robertson's operation of trephining the sclerotica accomplished perhaps even more. Forty or fifty years ago, globes tense from glaucoma had been directly punctured with a small knife to the relief of pain, etc., and such had been the practice of Dr. Jeffries' father.

As regards the operation referred to by Dr. Jeffries when the iris had not been cut off far back towards its ciliary attachment, Dr. Wadsworth said it would seem that the success in such cases was dependent on the principle first advocated by Wecker in 1869, namely, that the effect of iridectomy in glaucoma was not due to the removal of a portion of the iris, but to the formation

of a cicatrix in the sclera, which, being of a less density than the normal scleral tissue, admitted a filtration of the intraocular fluids through it. According to this principle, the removal of a portion of the iris was only a complication of the operation, generally necessary because of its tendency to prolapse through a wound so peripheral as must be made. Quaglino and others had reported cases successfully treated by sclerotomy alone. Trephining the sclera, as Robertson had recently done, appeared to involve the same principle.

Dr. Hay remarked that Hancock's operation perhaps had the same effect.

Dr. Wadsworth said that in Hancock's operation vertical incision, in an antero-posterior meridian, was made through the point of junction of the iris, ciliary body, and sclera, with the idea of dividing a ligament supposed to encircle the eye in that region.

Fibroid of the Uterus. — Dr. Porter showed a uterine fibroid, the size of an orange, which he had recently removed. It was attached by a pedicle just inside the os. The patient, about forty-five years of age, had suffered for three years past with excessive hæmorrhage at each menstrual period, continuing for a number of days.

Broken Bougie in the Perinæum. — Dr. Porter showed a whalebone bougie which he had removed by perineal section, after being passed into a false passage and broken off far back in the perinæum. The patient was suffering from retention of urine. The physician in attendance, after breaking the bougie, passed a sound into a false passage, and cut down upon that.

Foreign Body in the Bladder. — Dr. Porter showed also a bougie which he had recently removed from the bladder by the lithotrite. The patient entered the Massachusetts General Hospital, saying he had a bougie in the bladder. He had a stricture after a gonorrhœa contracted twenty years ago. Ten years ago he had perineal section performed, and was advised then to frequently pass the bougie. Lately he has been able to pass only a No. 4, and this had suddenly slipped into the bladder while he was walking about the room.

Diphtheritic Cast of the Trachea and Bronchi. — Dr. Whittier showed a membrane developed during the progress of a case of diphtheria, representing a cast of the trachea and the subdivisions of the bronchi, and gave the following notes of the case: Annie, five years old, sister of the patient, died on February 20th, nine days after the appearance of a diphtheritic membrane in the fauces, having but a few hours before her death, and after an emetic, expelled a well-formed cast of the trachea.

On February 20th, Mary, six years old, complaining only of a slight pain in her neck, was found to have a diphtheritic deposit, extremely narrow, extending downwards behind the right tonsil, and by night a membrane exceptionally white and lustrous covered the slightly projecting left tonsil. Without much variation, this membrane remained adherent about seven days, differing in this quite important particular from the later developed tracheal membrane. On the 25th, she was thought to have become a little hoarse during the night. Increasing difficulty of breathing and an attack of dyspnœa on the evening of the 26th led to an attempt to give an emetic, and in the struggle

she expectorated in long shreds membrane sufficient to line the trachea. On the morning of the 27th she threw off a perfect cast of the trachea, and in the evening of the same day an imperfect cast, with many fragments, and on the afternoon of the 28th the specimen presented to the society for examination. The subsequent re-development was equally rapid, and in thirty-six hours later the child died, the trachea apparently more obstructed than before.

The urine on the 25th was normal; on the 26th contained albumen, renal epithelium, small granular casts and some blood; on the 28th, one per cent. of albumen, large and small granular and epithelial casts.

Other evidences of systemic infection were wanting, and but very slight cervical glandular enlargement was present at any time.

Dr. Bowditch asked whether, if another emetic had been given combined with tonic treatment, there would have been any possibility of protracting life until the new formations should cease.

Dr. Whittier said that relief after vomiting continued from five to seven hours only.

Dr. Curtis suggested the subcutaneous injection of apomorphia to produce strong emesis without depression.

Dr. Arnold referred to a case of diphtheria where the trachea was dilated instead of contracted, and the membrane had undergone cretaceous degeneration. The child lived ten days.

Insanity complicating Pulmonary Disease. — Dr. Bowditch mentioned the case of a physician who became very much excited upon spiritual subjects, believing that he had a call from the Lord to perform certain acts. There was no fever, nor acceleration of the pulse. Forty-eight hours after the first manifestation of the disease he was seized with a severe convulsion, which was relieved by bleeding. A week later, though his mental condition was but very little disturbed in the meantime, he had a second convulsion, which lasted for three days and nights and was relieved only by chloroform. At the end of that time he awoke and asked for drinks. His mind became clear, but he complained of pain in the left side, attended with cough and increased rapidity of the pulse; temperature 102° F.; the patient was much prostrated. Physical examination of the chest showed entire flatness over lower half of left lung, absence of respiration in corresponding part with crepitant râles over left breast. The heart was dislocated somewhat towards the right. Thoracentesis was performed after the usual manner, and although the trocar seemed to pass into a cavity, yet only a few drops of fluid were obtained. A second tapping, a little above the first, had the same effect; iodine externally, and iodide of potash internally were prescribed.

Dr. Bowditch said he was in doubt as to the nature of the disease, whether there was a tuberculous condition present, or gelatinous masses containing fluid, or what.

Dr. Folsom remarked that he had once heard Dr. Ellis read a paper on diseases of the lungs coincident with disease of the brain, as shown by a case of pneumonia complicating meningitis, and it had been observed that cerebral symptoms often disappear as the pulmonary symptoms increase, and *vice versa*, in cases of insanity complicating lung trouble.

Silicate of Potassa Bandage. — Dr. T. B. Curtis compared a bandage made of silicate of potassa with one made of dextrine, and remarked that the former was much firmer than the latter. It had dethroned dextrine entirely in Paris. Silicate of soda, often used in this country, is far inferior to silicate of potash, as it stiffens very inadequately.

March 19, 1877. *Leucocythæmia.* — Dr. Morrill read a paper upon leucocythæmia, with marked reduction in the size of the spleen, which will appear in full.

Dr. Wood remarked that on examination of the urine in this case the proportion of uric acid to urea was found to be about one part to twenty-seven, whereas the normal proportion is one part to from fifty to eighty parts. This same condition has been noticed in other cases of leucocythæmia ; in one case reported, where the urine was examined every day for a month, the average proportion was one part to sixteen.

Dr. Wood inquired as to the diet in Dr. Morrill's case, as a nitrogenous diet was known to increase the amount of urea.

Dr. Morrill answered that the diet was general and not confined to nitrogenous articles.

Dr. Ellis said there were three points of special interest in this case, namely, the diminution in the size of the spleen, the formation of abscesses, and the souffle about the heart. The first is also noticed in disease of the lymphatic glands. The second may in some cases prove to be a collection of leucocytes, and not an abscess resulting from an additional inflammatory process. Such collections have been found in the large veins, and might be mistaken unless care was used. The third may have arisen from anæmia or displacement of the heart upwards, thus interfering with the circulation through the large vessels leading from the heart.

With reference to reduction in the size of lymphatic bodies, Dr. Warren remarked that he had seen a tumor of the neck so diminish, under the use of Fowler's solution, that the circumference of the neck was reduced from fifteen to thirteen inches within a few days, and a week later, even more than that. When the medicine was omitted the tumor would increase in size and *vice versa.*

Dr. Ellis asked if the change in the size of the spleen was determined by percussion or palpation.

Dr. Morrill answered, by the latter means, the reduction being very evident by this method.

Impacted Fracture of the Radius. — Dr. Dwight spoke of a case of fracture of the radius, which was remarkable simply from the manner of its occurrence. The patient, a lightly built girl of about eighteen years of age, was chopping wood some ten days before her appearance at the dispensary, in December, 1875. In bringing down the axe her elbow struck against a post behind her, giving her severe pain. The wrist swelled, but the trouble had not been recognized. It was an unmistakable impacted fracture of the lower end of the radius, which must have been caused by compression between the post behind and the handle of the axe, as it struck the wood, in front.

KRAUS ON THE DISEASES OF MAN.[1]

The work before us contains 970 pages, exclusive of preface and index. In these pages are treated the diagnosis, therapeutics, and ætiology of nearly all, if not all, the diseases known to the physician and surgeon, including all the specialties. The most general of practitioners cannot fail to find in this little book something upon any case, except purely obstetrical, that he may be called upon to treat.

Such an attempt naturally inspires distrust, and we think at once of students' compendiums and vade-mecums.

This first impression, however, is not fully sustained by an examination of the book, and the amount of valuable material compressed into it is really very great. Such compactness cannot of course be attained without sacrifices, and we find nothing of pathology or morbid anatomy, nothing of history, and but little discussion of varying theories. It is chiefly well-ascertained facts and the most generally received views that are recorded, and the treatment recommended is modern and rational.

Such a book is not for an ignorant person to take as his first source of information on any topic, but for one more or less familiar with the treatment of the same subjects on a larger scale it is an excellent remembrancer or outline map. In the prescriptions the metric system is employed, in accordance with a government order making the use of this system obligatory in the writing of recipes.

"In case recipes come in to be dispensed in which the doses of medicines are prescribed according to the old weights, apothecaries are obliged to change them into the new weights by the accompanying table and put up the prescription accordingly."

No better idea of the style and scope of the book can be given than by quoting an article therefrom, for which purpose we take the first page after the introduction: —

CEREBRAL HYPERÆMIA.

Forms. We may separate, according to the most prominent symptoms, the cephalalgic, psychic, convulsive, and apoplectic.

Causes. Mental exertion, sun-stroke, alcoholism, organic disease of the heart, emphysema, diseases of the liver, hæmorrhoids, etc., and in general all the circumstances which cause either active or passive congestion.

Symptoms. These vary greatly according to the degree, and are in general either irritative phenomena (headache, sensitiveness to light, noises in the ears, vomiting, delirium, hallucinations, spasmodic movements, contractions, etc.) or phenomena of depression (giddiness, loss of consciousness, pareses, paralyses.)

Therapeutics. In more acute cases, with vascular excitement, and when the

[1] *Diagnose und Therapie der Krankheiten des Menschen.* Mit Zugrundelegung der Lehren und Recepturen der ersten medizinisch-chirurgischen Autoritäten, und Anführung von 1500 Receptformeln nebst einem Anhange über Balneologie. Von Dr. B. Kraus.

Diagnosis and Therapeutics of the Diseases of Man. By Dr. B. Kraus. Vienna. 1877. (From E. Steiger, 22 and 24 Frankfort Street, New York.)

strength of the patient permits it, a copious venesection is indicated. Against the head symptoms leeches to the mastoid process, ice bags, mustard poultices to the neck, derivatives. In chronic cases a determination of the cause is important.

℞ Sal. amari (magnes. sulph.) 20.00
Aq. font. 400.00
Ac. sulph. dil. 2.00
S. Teaspoonful every two hours.

For derivation by the bowels.

℞ Inf. fol. sennæ.
E. . . . . 8.00 ad 140.00
Syr. simpl. 40.00
Use through the day.

℞ Aloes
Fol. lauris . . . . . āā 2.00
Ext. nuc. vomic. 1.00
Olei croton . . . . . gtt. 2.
Pulv. altheæ . . . . . q. s.
Ft. pill. No. 45.
One pill night and morning.

In congestion of the brain in consequence of habitual constipation.

It is manifestly impossible that a book of this kind should be written with which one could everywhere agree; we can only say that, so far as we have examined, no subject has suffered from neglect, and the author seems familiar with the more important advances of recent years. It is so far the superior of the other books of the class to which we at first naturally refer it that it hardly belongs there at all. Used in the way we have suggested, and in the light of more voluminous and more special works, it can hardly fail to be very useful.

MEDICAL NOTES.

— In a recent exchange, Fothergill, after discussion of the causes of sleeplessness, tabulates as follows the remedies which have been hitherto most highly recommended for this complaint: —

1. Opium is indicated when sleeplessness is caused by pain; when irritation of the vascular system is present, aconite and antimony are to be combined with it.

2. Hyoscyamus is of service when sleeplessness depends on disease of the kidney.

3. Chloral hydrate is inefficacious in sleeplessness dependent on pain, though it is a hypnotic *par excellence* in the sleeplessness of fever, particularly in children. This remedy is injurious in ill humor, brain exhaustion, and in the sleeplessness of melancholy.

4. Bromide of potassium acts as a sedative either on the brain cells or the vessels of the brain; it is indicated in those cases where peripheral irritations are present, and is very beneficial in the sleeplessness which is the result of maladies of the pelvic organs.

5. Alcohol is a powerful hypnotic in those cases in which sleeplessness comes from sorrow, ill humor, and mental disturbances.

BOSTON CITY HOSPITAL.

Case I. *Specific Neuralgia.* — Edward T., aged fifty-six, entered the service of Dr. Stedman December 5, 1876. In hospital five years ago with broken leg. He states that he had a sore on his penis thirty years ago. Between six or seven years ago had an attack of pain in the tibia and knee. This has troubled him more or less ever since. Has been troubled by slight cough for several years.

Now enters hospital with pain in right leg and in lumbar region. Appetite good and bowels regular. Pulse 67. Temperature 98.2°. States that he had an ulcer on his leg fourteen years ago. Five grains of iodide of potassium three times a day.

December 8th. Deep injection of chloroform, five minims, at night ordered. To be given behind trochanter.

December 10th. Injection gave great relief. To be continued.

December 13th. Effect of chloroform lasts about twenty-four hours.

January 3, 1877. Has improved under chloroform treatment. Still has pain in hip.

January 10th. Chloroform injections now repeated every two or three nights. Says he is doing finely.

January 18th. Treatment has been continued. Improvement has been steady.

January 27th. Gaining steadily, though he still has some pain in back. Cantharides plaster to back.

January 29th. Improving.

February 1st. Still asks occasionally for an injection.

February 5th. Discharged, relieved.

Injections gave relief for twenty-four hours, and also seemed to have a permanent improving effect. He attributed his comfort to them, and even when pain was not very acute desired an injection.

Case II. *Intercostal Neuralgia.* — Bernard C., carpenter, aged forty-two, entered the service of Dr. Stedman December 7, 1876. Patient was in hospital November 13th with "subacute rheumatism," and was discharged November 27th, well. Two days after leaving the hospital he was exposed to "cold drafts," through working in an open shed. He was taken next day with cough, which has increased in severity up to the present time. Now complains of pain in back, ankles, and left side. Pain on taking a long breath, and is unable to lie on left side. Appetite poor, bowels regular. Pulse 80. Temperature 98.6°. Cotton jacket ordered.

December 11th. Complains of pain in left side. Blister, two by two inches, to be applied.

December 13th. Deep injection of chloroform to be given to relieve pain in back.

December 17th. Chloroform gave considerable relief.

December 18th. Blister, two by two, to be applied to left chest.

January 3, 1877. Much improved. Tincture of muriate of iron, twenty drops three times a day.

January 8th. Discharged, relieved.

Case III. *Sciatica.* — Sarah McK., aged fifty-one, housekeeper, entered hospital December 15, 1876. Family history good. Twelve years ago fractured left leg twice, and since has walked on crutches. Nine years ago had pain over left hip, which lasted several months, and then passed off. Four years ago this pain reappeared, and has troubled her more or less. About three months ago pain also appeared in left arm and right wrist, and has lasted ever since. Appetite good, bowels regular. Pulse 76. Temperature 98.1°.

December 20th. Deep injection of chloroform ordered. Injection to be given in seat of greatest pain, as marked by the patient, generally behind the great trochanter, or in the course of the sciatic nerve.

December 21st. Five minims of chloroform were injected. The patient expressed herself as very much relieved.

December 22d. One eighth of a grain of sulphate of morphia was injected this evening. The patient felt relieved, but not so much so as after the chloroform, and noticed the difference between the drugs at once. Patient generally more comfortable.

December 24th. Chloroform, five to ten minims, given now every other night.

January 1st, 1877. Injection has been repeated as often as before. Pain in hip much lessened. Asks herself for the chloroform, and thinks nothing else can do her any good.

January 12th. Still improving. She now has the injection every third or fourth night. The pain is said to be much less acute than when she came in.

January 21st. Improvement constant. Chloroform is now given every fifth night.

January 29th. Injections are now given sometimes every third or fourth night, and sometimes every fifth or sixth. The patient still asks for injection when in pain. Sometimes desires it in two places, as in hip and knee, the same evening. When two injections are given, about eight minims are given in each place.

February 17th. The patient for the last two weeks has been treated by Dr. Webber with electricity. This is given every other day. Still improving. Chloroform given every fifth or sixth day.

February 23d. Chloroform once a week. She says that after the first two injections of chloroform she was more comfortable than she had been for four years, and could touch right leg without shrinking.

March 1st. Has been constantly improving since the last record. She now has injections at irregular intervals, about once in two or three weeks.

March 19th. The patient complains of pain, and the injections are repeated.

March 20th. She is much relieved.

March 22d. She complains of pain again, and asks for chloroform. Injection repeated with relief.

March 26th. Injection repeated with relief.

The patient now walks about the ward with the aid of crutches, though with

considerable difficulty and labor. Says she has very much improved since she came in.

Case IV. January 13, 1877. *Sciatica.* — P. A., stone-cutter, aged forty-six. Family and personal history good. Two years ago had "sciatica." The patient now complains of a pain which follows a line drawn from behind the great trochanter of the right leg to the ankle. This pain has been shooting and darting in character, but is now a constant and wearing one. On the right buttock a surface three inches square is denuded of epidermis. This was caused by a blister applied by himself. Appetite good, bowels regular. Pulse 80. Temperature 99°.

January 14th. Five minims of chloroform to be deeply injected behind the great trochanter.

January 17th. Last evening injection was repeated. This relieved the pain very much, though the patient complained of the pain caused by the insertion of the needle, and of numbness near the seat of puncture.

January 19th. Last evening eight minims of chloroform were injected in two places, behind the trochanter and in the muscles of the calf. This morning there is great improvement.

January 21st. A small circumscribed induration is felt in the calf at the seat of puncture. Some pain in thigh. Ten minims of chloroform given behind trochanter.

January 23d. Omit chloroform. Iodide of potassium, ten grains three times a day.

January 27th. The patient now uses soap liniment night and morning, and says this relieves the pain. Cantharides plaster, two by two, behind trochanter.

January 29th. The blister gives great relief.

January 30th. He is gaining very fast.

February 12th. Discharged, well.

February 21st. The patient reëntered the hospital this day with renewal of the old trouble. Pain is not so severe as before, but running the same course down the leg. Eight minims of chloroform were injected behind the trochanter.

February 22d. The chloroform removes the shooting pain, the effects being perceptible in five minutes, without drowsiness or feeling of stupidity. Some soreness produced at seat of puncture which lasts about twelve hours, and a swelling was felt which disappeared during the night.

February 24th. He feels a numbness in the affected leg from knee to ankle, but has no sharp pain. P. M. Sharp pain recurred. Injection repeated.

March 5th. No sharp pain since last record. Discharged, well.

Case V. January 19, 1877. *Brachial Neuralgia.* — Margaret T., domestic; aged thirty; married. The family history is obscure. The patient was in the hospital two years ago, under Dr. Edes, with chronic rheumatism. She now has pain in the left shoulder and arm, shooting in character, but not constant. She also has pain over the cervical vertebræ. She says she has lost some power in that arm and side. Appetite poor, bowels constipated. Leucorrhœa; catamenia irregular. Pulse 72. Temperature 98.8°.

January 20th. Over seventh cervical vertebra in painful region there is a small circumscribed spot of induration. Blister to be applied. Iodide of

potassium, five grains three times a day. Inject ten minims of chloroform into substance of deltoid.

January 21st. Says her shoulder is better this morning than it has been for five weeks. No difference in temperature of two hands.

January 22d. The shoulder is very painful. Injection repeated. This P. M., the shoulder entirely free from pain.

January 25th. Some pain in head. Iodide of potassium, ten grains three time a day.

January 26th. Injection repeated this morning. The effects of the chloroform seem to last fifteen hours, during which time she is almost entirely free from pain. She complains also of pain in left side.

January 29th. No injection since the morning of the 26th. Patient has been free from pain since then.

February 5th. Discharged, relieved.

CASE VI. *Sciatica.* — Joseph G., carpenter, aged twenty, entered the hospital January 31, 1876. Family history good. He was sick four years ago with typhoid fever, but since then has been well till eight or nine weeks ago. Then he began to have a pain in right leg, running from the hip behind trochanter to the knee and sometimes to the ankle. The pain is not constant, and has been severe for two or three weeks only. Appetite good, bowels regular. Temperature 98.6°. Pulse 76.

February 2d. Eight minims of chloroform were injected this morning.

February 3d. Patient reports himself relieved.

February 5th. Injection repeated this A. M.

February 7th. Repeat injection, the former injection having given great relief.

February 8th. Sulphate of quinine, one grain three times a day.

February 17th. Condition much improved. He goes about the ward with but little complaint.

February 21st. Discharged, well.

CASE VII. February 8, 1877. Mary H., domestic; aged forty-three; married. Mother died of consumption. The health was good till three years ago, when she began to be troubled with "rheumatism" and "indigestion." For about six weeks she has complained of pain more or less severe, but generally worse at night. This is situated in right leg, and runs from behind the great trochanter down the back of leg to knee and sometimes to ankle. Appetite poor, bowels constipated. Temperature 98.5°. Pulse 68. Iodide of potash, five grains three times a day. Chloroform to be given by deep injection.

February 10th. Injection of chloroform does not seem to affect the pain.

February 14th. Pain less, and seems to be confined chiefly to knee and ankle.

February 15th. Iodide of potash increased to ten grains three times a day.

February 16th. Pain only in knee.

February 17th. Whole leg painful.

February 18th. Five minims of chloroform were injected each side of knee on account of severe pain there.

February 19th. She is easier this morning. No pain in leg.

February 21st. No pain in leg since the 18th. This afternoon complains of some soreness, but jumping and shooting pain has not recurred.

February 24th. Pain, though not acute, in both legs last night.

February 25th. Soreness of legs continues, but no sharp, jumping pain since the 18th.

March 5th. Dull pain in both knees, which were wrapped in cotton.

March 9th. Syrup of triple phosphate, two drachms three times daily. Now has no pain in hips. Generally better.

March 24th. No pain this morning. Patient improving. No chloroform since the 18th of last month.

CASE VIII. *Frontal Neuralgia.* — John R., marble-cutter, twenty-eight years old; entered hospital March 23, 1877. Generally healthy. For three weeks he has been confined to bed with a sharp and constant pain in the left frontal region, preventing sleep. No specific history. Photophobia. Eyes, examined by Dr. Wadsworth, were normal excepting conjunctivitis. Appetite fair, bowels regular, urine normal. Sulphate of quinine, two grains three times daily.

March 27th. No relief. Inject ten minims of chloroform at night.

March 28th. The pain in head was very severe before the injection. The injection was immediately followed by increased pain, but after two minutes all pain ceased, patient became drowsy, and slept all night. The place of puncture is tender and swollen to the size of an English walnut. There is no intolerance of light.

March 30th. Though somewhat contradictory in his statements, he has had but very little supra-orbital or temporal pain since the injection. Has been sitting up and walking about. Appetite improving, slight fullness at seat of injection.

At his own request he is discharged, relieved.

COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING MAY 12, 1877.

	Estimated Population, July 1, 1877.	Total Mortality for the Week.	Annual Death-Rate per 1000 for the Week.	Death-Rate for the Year 1876.
New York	1,077,228	440	21.24	27.46
Philadelphia	850,856	276	16.87	22.88
Brooklyn	527,830	199	19.60	24.31
Chicago	420,000	154	19.19	20.41
Boston	363,940	115	16.46	23.39
Providence	103,000	39	19.69	18.34
Worcester	52,977	18	17.67	22.00
Lowell	53,678	20	19.37	22.21
Cambridge	51,572	12	12.09	20.54
Fall River	50,370	10	10.32	22.04
Lawrence	37,626	10	13.82	23.32
Lynn	34,524	13	19.57	21.37
Springfield	32,976	4	6.31	19.69
Salem	26,739	11	21.39	23.57

American Gynecological Society. — Programme of the second annual meeting, to be held in the hall of the Boston Society of Natural History, corner of Berkeley and Boylston streets, Boston : —

May 30th. — 1. Dilatation of the Cervix Uteri for the Arrest of Uterine Hæmorrhage, by Dr. George H. Lyman, of Boston.

2. The Corpus Luteum, by Dr. John C. Dalton, of New York.

3. Excision of the Cervix Uteri, its Indications and Methods, by Dr. John Byrne, of Brooklyn.

4. The Pathology and Treatment of Puerperal Eclampsia, by Professor Otto Spiegelberg, of Breslau, Prussia.

5. The Principles of Gynecological Surgery applied in Obstetric Operations, by A. J. C. Skene, of Brooklyn.

6. A New Theory as to the Function of the Third Sphincter Ani, so called, by Dr. James R. Chadwick, of Boston.

May 31st. — 7. Some Cases illustrating the Operation of Induction of Premature Labor; the best Methods and Results, by Dr. R. A. F. Penrose, of Philadelphia.

8. Annual Address on Medical Gynecology, by the president, Dr. Fordyce Barker, of New York.

9. The Intra-Uterine Treatment of Flexions, by Dr. Ely Van de Warker, of Syracuse, New York.

10. On the Necessity of Caution in the Employment of Chloroform during Labor, by Dr. William I. Lusk, of New York.

11. Subsulphate of Iron as an Antiseptic in the Surgery of the Pelvis, by Dr. H. P. C. Wilson, of Baltimore.

12. The Relations existing between Pregnancy and Phthisis, by Dr. W. L. Richardson, of Boston.

June 1st. — 13. Is there a Proper Field for Battey's Operation? by Dr. Robert Battey, of Rome, Ga.

14. A Case of Vaginal Ovariotomy, by Dr. William Goodell, of Philadelphia.

15. Sarcoma of the Ovaries, by Dr. Washington L. Atlee, of Philadelphia.

16. Tetanus after Ovariotomy, by Theophilus Parvin, of Indianapolis.

17. The Value of Electrolysis in the Treatment of Ovarian Tumors as seen in the Light of Recent Experience, by Dr. Paul F. Mundé, of New York.

The general profession are cordially invited to attend.

James R. Chadwick, *Secretary.*

The Censors of Suffolk District will meet for the examination of candidates on June 7th. See advertisement.

Books and Pamphlets Received. — Excision of the Larger Joints of the Extremities. By G. H. Culbertson, M. D. Prize Essay. Supplement to Volume XXVII. of the Transactions of the American Medical Association. 1876. Philadelphia. (From A. Williams & Co.)

West Riding Lunatic Asylum Medical Reports. Edited by J. Crichton Brownell, M. D., and Herbert C. Mayor, M. D. Vol. VI. 1876. London: Smith, Elder & Co. (From the Publishers.)

The Discovery of Anæsthesia. By J. Marion Sims, M. D. (Reprint from Virginia Medical Monthly.)

Notes on New Remedies. Theodore Metcalf & Co.

He Holds the Fort of Heaven. (From F. W. Helmic, Music Publisher, Cincinnati.)

Hutchinson's Illustrations of Clinical Surgery. Fasciculus VII. Philadelphia: Lindsay and Blakiston. 1877. (From James Campbell.)